Its nearest ally is *T. muricatus*, a Mediterranean species; but the present species differs in having a much shorter spire, with swollen whorls, in the sculpture being smooth instead of prickly, the longitudinal striæ finer and more numerous, the mouth wider and the throat smooth, and in the canal being much shorter and more open.

Black Sea, 45 and 50 fms. Several specimens.

The Black Sea is zoologically an offset of the Mediterranean, the latter and the Sea of Marmara being the intermediate links in the chain which connects the Black Sea with the North Atlantic. I have endeavoured to show, in the 'Reports of the British Association for the Advancement of Science,' that the Mollusca of the Mediterranean scarcely, if at all, differ from those of the North Atlantic.

XLVI.—*On the Identity of* Ceramopora (Berenicea) megastoma, *M'Coy, with* Fistulipora minor, *M'Coy.* By JOHN YOUNG, F.G.S.

To the Editors of the Annals and Magazine of Natural History.

GENTLEMEN,

In vol. xviii. (4th series) of the 'Annals,' for 1876, there is a paper by Dr. Gustav Lindström, "On the Affinities of the Anthozoa Tabulata," in which, at pp. 5–9, he calls attention to certain Silurian fossils that have been referred to the Tabulata, but which he says are in reality Bryozoa. As evidence of what he asserts, he refers to the common Silurian *Monticulipora petropolitana*, Pand., which, he says, begins life "as a Bryozoan, as a *Discoporella*, as what Hall has termed *Ceramopora imbricata*," and he then goes on to describe it briefly from its earliest stages of growth until it arrives at the stage where it becomes a *Monticulipora*.

Prof. H. Alleyne Nicholson, in his 'Tabulate Corals,' pp. 285–288, questions the correctness of Dr. Lindström's statements, and says "there are very strong grounds for regarding *Ceramopora* as an independent organism, quite distinct from all the forms of *Monticulipora*."

It may therefore interest some of the readers of the 'Annals' to learn that I have discovered specimens of another Bryozoan, or Polyzoan as I prefer to term it, in the Carboniferous-limestone strata of Western Scotland, that is closely allied to the Silurian *Ceramopora*, and which I have been enabled to follow clearly in all its various stages of growth until it becomes a true *Monticulipora*—the organism in question being the *Berenicea megastoma*, M'Coy, *Diastopora*, Morris's Catalogue, but which has been more correctly referred to *Ceramopora* by G. R. Vine, in his paper "On the Family Diastoporidæ," Quart. Journ. of the Geol. Soc., Aug. 1880, p. 359.

I shall not now enter upon any exhaustive description of this organism in its several stages, but briefly state that it is found in its first or earliest stage in small, circular, incrusting patches, 3 lines in diameter, or what M'Coy terms "spot-like crusts," attached to shells, stems of Crinoids, Polyzoa, Corals, &c., the cells being depressed or oblique, and radiating outwards from a bare central spot or macula.

In its next stage it is found in similar incrusting patches, varying in size from a half inch to two or more inches in extent. In this stage the cells are still much reclined, and have their mouths of a trilobed form when quite perfect, but roundly triangular or pyriform when the outer surface is worn. The more perfect trilobed form of the cell-mouths is due to the occurrence of two short spines that project, one on each side, on the raised lower lip of the cell—a character that has likewise been noticed in some of the Silurian *Ceramoporæ*. In some specimens in this stage of growth the cell-mouths are seen to be closed by a thin calcareous cover, which I now consider to be the commencement of tabulæ in the cells. In the spaces between the cells there are also numerous small polygonal cells that are arranged in from one to three rows. I first called attention to these new characters in *C. megastoma*, M'Coy, in the Trans. of the Geol. Soc. Glasg. vol. vi. p. 213, 1879; but at that time I had not seen Dr. Lindström's paper, and had no idea that the organism afterwards developed into a *Monticulipora*.

The next stage is where we find the organism in thicker incrusting patches, in which the larger cells are seen to become more erect, while their mouths become nearly circular, the openings in some specimens being quite round, with a slightly raised rim to the cell; but the roundly triangular form of the cell-mouths of the earlier stage can always be traced in such specimens when sections of the organism are cut near the base. In this stage, which Dr. Lindström calls the third, we often find the small polygonal cells or tubes that occupy the space between the larger tubes closed by a thin, dense, calcareous outer layer, which leaves only the larger cell-openings visible. This he terms the *Thecostegites*-stage; but when this is the case the smaller tubes can always be exposed by grinding a little way below the surface, so as to remove this layer. It is probable that it is this outer layer that forms the successive tabulæ in the smaller polygonal tubes, just as the calcareous covers found in the larger cells may be the tabulæ of these tubes; for I find these external characters in all the stages of growth.

The last or oldest stage in which I have found this organism is in incrusting patches, varying from 1 to 6 or 8 lines in thickness, the thicker specimens often showing several concentric or zonal layers of growth, in which the larger cells form erect continuous tubes that open at the surface with nearly circular mouths. In all specimens that have their structure well preserved the larger tubes are seen to be tabulated, the tabulæ, which are nearly horizontal, being somewhat irregular in their distance from one another: in some specimens they are less than the diameter of the tube apart; in others they are much wider, which leads me to think that in some cases they have partly disappeared during fossilization. The smaller polygonal tubes, on the other hand, are always closely and more strongly tabulated, the tabulæ being generally horizontal, but sometimes curved or vesicular. In this, the latest stage of the organism (so far as I am acquainted with it), it is identical with the *Fistulipora minor*, M'Coy, which Prof. Nicholson, in his 'Tabulate Corals,' now places with the *Monticuliporæ*. I now find that all the specimens that I had formerly identified with *F. minor* from the limestone strata of Western Scotland must be regarded as only the more advanced stage of *Ceramopora megastoma*, M'Coy. This I have been able satisfactorily to determine, from the preparation of numerous sections of the organism in all its stages of growth that are contained in my own collection, as well as from the careful study of a number of beautifully preserved specimens from the Braidwood limestone, Carluke, Lanarkshire, now in the cabinet of Dr. J. R. S. Hunter, of that district.

In Dr. Hunter's polished sections one is enabled to trace clearly, even in the same specimen, the several phases of the organism, from its first *Ceramopora*-stage, in which the cells are seen to be reclined and with roundly triangular mouths that have thickened, raised lower lips, onwards into the *Fistulipora*-stage, when the larger tubes become erect and open at the surface with nearly circular mouths, and have their interiors partitioned off by tabulæ. I have also well-preserved specimens from the Ayrshire Carboniferous limestones showing the same stages of structure; and this leads me to remark that, as we have only one species of *Ceramopora* in the Carboniferous strata of Scotland which is also found in all the localities with *Fistulipora minor*, there is therefore no room left for doubt in this case as to the direct identification of the above organism in all its stages with that which ultimately becomes *F. minor*, M'Coy.

I may here mention that *Ceramopora megastoma*, M'Coy, is very abundant in certain of the argillaceous limestone-shales in the Lanarkshire coal-field; yet in many localities, except in a few instances, the great majority of specimens have rarely advanced in growth much beyond the first or *Ceramopora*-stage. Probably this arose from the conditions being unfavourable to its fuller growth and development over those tracts of the sea-bottom on which much clayey sediment was being deposited. On other horizons, where the strata are more calcareous, as in some of the limestones, it is found in all its stages of growth. I may also further mention that, on nearly all the specimens that have their surface well preserved, maculæ and monticules are present, and occur at intervals of about 3 lines apart amongst the cells. These maculæ and monticules, so characteristic of the Monticuliporidæ, are present in all the stages of the organism, the maculæ in the younger and the monticules in the older stage; but the latter are sometimes also seen on specimens in the earlier stage, and are sometimes well developed. In stating that *F. minor*, M'Coy, possesses monticules that rise in stellate elevations above the surface I go against Prof. Nicholson, who says, in his definition of *Fistulipora*, M'Coy ('Tabulate Corals,' p. 292), that they "never project as stellate elevations above the general surface." I happen, however, to have one or two specimens that clearly show them as such. Prof. Nicholson also describes *F. minor* (p. 306) as having "few or no tabulæ" in the larger corallites. Prof. M'Coy, on the other hand (Pal. Foss. p. 79), says that they "are only about half their diameter apart." So far as well-preserved specimens in my collection show, I find that the tabulæ in the larger tubes vary in different specimens, being sometimes less than the diameter of the tubes apart, and sometimes much more; but, as a rule, they are moderately common, and are not to be considered absent or rare. The foregoing observations on this organism have been chiefly derived from the study of specimens in my own cabinet and that of Dr. Hunter, and they seem to me to be quite confirmatory of what Dr. Lindström has already shown to be the case with certain of the Silurian Polyzoa. I shall not, however, enter upon a discussion of the vexed question as to the zoological position of the organisms showing these changes, but only state that, as regards the Carboniferous form, one of two things seems certain, viz.:—that if *Fistulipora minor*, M'Coy, be held to be a tabulated coral of the *Monticulipora* group, then *Ceramopora megastoma*, M'Coy, is only its younger stage; if, on the other hand, the latter form be held to be a true Polyzoon, then its later stage is only a fuller development of Polyzoal life, and *F. minor* and the other forms indicated in Dr. Lindström's paper in the 'Annals' must of necessity be removed from the Tabulate Corals.

I am, Gentlemen,
Faithfully yours,
JOHN YOUNG.

Hunterian Museum,
University of Glasgow,
October 14th, 1882.

XLVII.—*Descriptions of two new Species of Birds from Sumatra.* By Captain R. G. WARDLAW RAMSAY, The Highland Light Infantry.

Hemixus sumatranus, sp. n.

Hypsipetes malaccensis, Salvadori, Ucc. di. Sum. p. 57, spec. no. 62.

A representative of *H. virescens* (Temm.) of Java, from which it differs in having the upper surface, wing-coverts, and outer edges of the quills olive-brown in place of olive-green, this colour being much deeper on the head; ear-coverts brown with pale shafts; throat, fore neck, and breast like the back; the shaft and a streak down the centre of each feather white; flanks, abdomen, and under tail-coverts white, tinged with pale yellow, some of the feathers margined with olive-brown; under wing-coverts and axillaries pale yellow; quills dusky brown below, slightly tinged with buff on their inner webs. Wings 3·7, tail 3·7, bill from gape ·85.

I obtained this specimen from Count Salvadori in a small lot of duplicates of M. Beccari's collection. It was obtained on Mount Singalan, in Western Sumatra.

Criniger sumatranus, sp. n.

Represents *C. gutturalis* of Borneo and Malacca, from which it differs in having the head greyish brown instead of rufous brown, the throat purer white, the whole under surface of a much darker shade of yellowish olive, and the lower tail-coverts deep reddish ochraceous. Size about the same.

♀. Iris bluish brown. M. Sago, Sept. 2 (*Bock*).
♂. " Indian red. " " "
? " brown. Paio " "

Eleven specimens in all were collected by Mr. Carl Bock in Western Sumatra.